

**UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION**

ENTROPIC COMMUNICATIONS, LLC,

Plaintiff,

v.

CHARTER COMMUNICATIONS, INC.,

Defendant.

Case No. 2:23-cv-00050-JRG

DEMAND FOR JURY TRIAL

FIRST AMENDED COMPLAINT FOR PATENT INFRINGEMENT

Plaintiff, Entropic Communications, LLC (“Entropic”), files this complaint for patent infringement against Charter Communications, Inc. (“Charter”), and in support thereof alleges as follows:

1. Around the turn of the millennium, cable and satellite providers were eager to deploy new and improved services, but they faced a big problem. The providers needed a high-speed data network inside buildings to deliver those services to various rooms. With existing technology, this meant installing new cabling inside each premises to carry the network. Aside from the costly materials themselves, technicians would be forced to spend hours planning the work, cutting and drilling into walls, and fishing cables throughout a building, all while doing so in ways customers might tolerate. The costs would run into the billions of dollars.

2. A group of inventors had a vision: what if they could repurpose the already-existing coaxial cables common in buildings to do the job? The challenges were daunting. Existing coaxial cabling was never intended to work this way. The mess of existing coax topologies in homes and businesses was a formidable barrier. The splitter devices used to distribute legacy TV obstructed signals from room-to-room. Making it all work would require nothing less than the invention of a new networking architecture founded upon a host of new technologies.

3. They succeeded. The inventors’ company, called Entropic Communications Inc. (“Entropic Inc.”), made the technology work. The company was awarded a portfolio of patents for the advances that made it possible. And the company spearheaded forming a new industry standard for the architecture, commonly called MoCA.

4. Today, MoCA is the backbone of data and entertainment services for tens of millions of customers. MoCA is widely used by every major provider in the industry, saving them billions of dollars in costs and avoiding the hassle of re-wiring for providers and customers alike.

Unfortunately, the defendants take advantage of MoCA without paying appropriate licensing fees for the technology. This lawsuit is about redressing that wrong.

5. Key patents incorporating various elements of technology set forth in the Multimedia over Coax Alliance standards (the “MoCA” standards)¹ are U.S. Patent Nos. 7,295,518 (the “’518 Patent”), 7,594,249 (the “’249 Patent”) (together the “Network Patents”); U.S. Patent Nos. 7,889,759 (the “’759 Patent”), 8,085,802 (the “’802 Patent”) (together the “Node Admission Patents”); U.S. Patent Nos. 9,838,213 (the “’213 Patent”), 10,432,422 (the “’422 Patent”) (together the “PQoS Flows Patents”); U.S. Patent Nos. 8,631,450 (the “’450 Patent”), 8,621,539 (the “’539 Patent”) (together the “Link Maintenance Patents”); U.S. Patent No. 8,320,566 (the “’0,566 Patent” or the “OFDMA Patent”); U.S. Patent No. 10,257,566 (the “’7,566 Patent” or the “Network Coordinator Patent”); U.S. Patent No. 8,228,910 (the “’910 Patent” or the “Packet Aggregation Patent”); U.S. Patent No. 8,363,681 (the “’681 Patent” or the “Clock Sync Patent”).

6. This is a civil action arising under the patent laws of the United States, 35 U.S.C. § 1 *et seq.*, including specifically 35 U.S.C. § 271, based on defendant’s infringement of the ’518 and ’249 Patents; the ’759 and ’802 Patents; the ’450 and ’539 Patents; and the ’7,566 Patent² (collectively the “Patents-in-Suit” or “Asserted Patents”).

THE PARTIES

7. Entropic is a Delaware limited liability company with an office at 7150 Preston Road, Suite 300, Plano, Texas 75024.

¹ Each version of the MoCA standards are referred to herein as “MoCA 1.0,” “MoCA 1.1,” and “MoCA 2.0.”

² Entropic has filed a second, related lawsuit in this Judicial District regarding Charter’s infringement of the ’213 Patent, the ’422 Patent, the ’0,566 Patent, the ’910 Patent, and the ’681 Patent.

8. Entropic is the owner by assignment to all right, title, and interest to the Patents-in-Suit. Entropic is the successor-in-interest for the Patents-in-Suit.

9. Upon information and belief, Defendant Charter Communications, Inc. is a corporation established under the laws of the State of Delaware, with a principal place of business at 400 Washington St., Stamford, Connecticut 06902.

10. Charter Communications, Inc. has a registered agent in Texas, Corporation Service Company d/b/a CSC - Lawyers Incorporating Service Company, located at 211 East 7th Street, Suite 620, Austin, Texas 78701.

11. According to its website, <https://corporate.charter.com/about-charter>, “Charter Communications, Inc. (NASDAQ:CHTR) is a leading broadband connectivity company and cable operator serving more than 32 million customers in 41 states through its Spectrum brand.”

12. Charter owns or leases, and maintains and operates several stores in this district by and through subsidiary limited liability companies that it manages and controls, including Spectrum Gulf Coast LLC, and negotiates and signs agreements on Spectrum Gulf Coast’s behalf.

13. Charter is the corporate manager of its subsidiary LLCs that own or lease property in this district, that employ employees in this district, and that own, store, sell, demonstrate, and lease equipment in this district. Charter has the right to exercise near total control of each entity’s operations through its LLC agreements with each entity.

14. In each of those stores, Charter owns and stores equipment such as modems and set top boxes (“STBs”), including the Accused MoCA Instrumentalities (defined below) and demonstrates the Accused Services (defined below) provided via those products to Charter customers by and through subsidiary limited liability companies that it manages and controls.

15. Charter employs and/or contracts with persons and directs them to install, service, repair and/or replace equipment, as appropriate, in this district by and through subsidiary limited liability companies that it manages and controls.

16. Charter is the corporate manager of its subsidiary LLCs that own or lease property in this district, that employ employees in this district, and that own, store, sell, demonstrate, and lease equipment in this district. Charter has the right to exercise near total control of each entity's operations through its LLC agreements with each entity.

17. As further alleged herein, this Court has personal jurisdiction over Charter, and venue is proper in this Judicial District.

PRESUIT DISCUSSIONS

18. Prior to filing of this Complaint, Entropic sent a communication by physical means to Charter on April 27, 2022, in an attempt to engage Charter and/or its agents in good faith licensing discussions regarding Entropic's patent portfolio, including the Patents-in-Suit. On December 23, 2022 and January 2, 2023, Entropic sent Charter another communication by both physical and electronic means regarding a separate license to Entropic's patents for the field of the standardized networking technology commonly called MoCA, and also seeking to discuss with Charter a typical non-disclosure agreement in order to share such information.

ENTROPIC'S LEGACY AS AN INNOVATOR

19. Entropic Inc., the predecessor-in-interest to Entropic as to the Patents-in-Suit, was founded in San Diego, California in 2001 by Dr. Anton Monk, Itzhak Gurantz, Ladd El Wardani and others. Entropic Inc. was exclusively responsible for the development of the initial versions of the MoCA standards, including MoCA 1.0, ratified in 2006, MoCA 1.1, ratified in 2007, and was instrumental in the development of MoCA 2.0, ratified in 2010. It also developed Direct Broadcast

Satellite (“DBS”) Outdoor Unit (“ODU”) single wire technology, and System-on-Chip (“SoC”) solutions for set-top boxes (STBs) in the home television and home video markets.

20. Under the technical guidance of Dr. Monk, Entropic Inc. grew to be publicly listed on the NASDAQ in 2007. After the public listing, the company acquired RF Magic, Inc. in 2007, a company specializing in DBS ODU technology and related hardware.

21. Additional growth between 2007 and 2015 bolstered the technical expertise of Entropic Inc. with respect to signal acquisition, stacking, filtering, processing, and distribution for STBs and cable modems.

22. For years, Entropic Inc. pioneered innovative networking technologies, as well as television and internet related technologies. These technologies simplified the installation required to support wideband reception of multiple channels for demodulation, improved home internet performance, and enabled more efficient and responsive troubleshooting and upstream signal management for cable providers. These innovations represented significant advances in the field, simplified the implementation of those advances, and reduced expenses for providers and customers alike.

23. In 2015, MaxLinear, Inc. (“MaxLinear”)—a leading provider of radio-frequency, analog, digital, and mixed-signal semiconductor solutions—acquired Entropic Inc., and the pioneering intellectual property developed by Dr. Monk and his team.

24. In 2021, Plaintiff Entropic was established and MaxLinear transferred to Entropic a portfolio of intellectual property representing the Entropic and MaxLinear innovation in the cable and satellite services markets.

MOCA® AND THE MOCA® STANDARDS

25. MoCA is an alliance of companies that operate in the field of technology associated with providing multimedia services, such as television operators, consumer electronics,

manufacturers, semiconductor vendors, and original equipment manufacturers (OEMs). MoCA has developed and published a standard governing the operation of devices using existing coaxial cable.

26. By the year 2000, cable and satellite providers were facing the problem of distributing services as data between the various locations in a dwelling where desired by customers. This would require a full digital network, capable of communication between any node in the network, in any direction. Traditional computer networking such as Ethernet provided some of the functionality, but the cabling necessary for Ethernet or the like was (and is) very expensive to install.

27. At the time, millions of dwellings and businesses across the United States often already had existing coaxial cable (“coax”) deployed throughout the premises to provide traditional television programming services to various rooms. However, this cabling was not designed or envisaged as a two-way and point-to-point network, nor a network capable of carrying high speed digital data traffic. The coax was deployed as a “tree” topology which simply splits the signal coming from an external source (the cable or satellite feed) for distribution of video content to the various locations on the premises in the “downlink” direction only. Thus, it was impossible to simply use this existing cable to make the new point-to-point high-quality network connections between devices located on the premises desired by the cable and satellite providers.

28. Entropic Inc. tackled the problem and managed what was considered unlikely or impossible—to make a high-speed point-to-point digital communication network using existing coax installations. This required substantial inventive effort that is embodied by the Patents-in-Suit. For example, one of the significant challenges faced by Entropic Inc. was the varying nature of the exact topology of existing on-premises coax infrastructure that a network architecture would

have to handle. The topology and types of devices (such as passive or active splitters, their characteristics, etc.) greatly influence the environment for signals transferred from node to node.

29. Entropic Inc. later founded an organization to standardize the networking architecture and promote its use. This became known as the Multimedia over Coax Alliance, or “MoCA.” That acronym has also come into common usage as the name given to the networking architecture itself—now embodied in the MoCA standards. The technology defined in the MoCA standards enables the point-to-point high-quality network so badly needed by cable and satellite providers. Crucially it also provides the operators the ability to deploy their services without the enormously costly effort of installing Ethernet or similar cabling to carry the data.

30. There have been several iterations of the MoCA standards, beginning with MoCA 1.0, which was ratified in 2006. Since 2006, MoCA has ratified subsequent versions of the MoCA standards, including MoCA 1.1 and MoCA 2.0.

31. The MoCA standards ensure network robustness along with inherent low packet error rate performance and very low latency that is relatively independent of network load. The logical network model of the MoCA network is significantly different from the underlying on-premises legacy coaxial network. For example, due to the effects of splitter jumping and reflections, the channel characteristics for a link between two MoCA nodes may be dramatically different from a link between any other two MoCA nodes.

32. **The Network Patents (the ’518 and ’249 Patents)** and the **OFDMA Patent (the ’0,566 Patent)** describe MoCA networks, including how data communicated via MoCA networks is modulated by full-mesh pre-equalization techniques known as Adaptive Constellation Multitone (ACMT), a form of OFDM modulation.

33. As described in the **Network Coordinator Patent (the ’7,566 Patent)** and the **Node Admission Patents (the ’759 and ’802 Patents)**, a particular MoCA node, known as a

Network Coordinator, controls the admission of nodes to the MoCA Network. The Network Coordinator sends out a variety of data packets using a modulation profile that all the MoCA nodes can receive. For broadcast and multicast transmissions, a broadcast bitloading profile can be calculated and used for each node receiving the transmissions in the MoCA network.

34. MoCA nodes use a modulation profile for every point-to-point link. A variety of probe messages are transmitted by the MoCA Nodes and used to create modulation profiles, optimize performance, and allow for various calibration mechanisms. In order to maintain network performance as network conditions change, the MoCA standards define techniques to maintain optimized point-to-point and broadcast links between all of the MoCA nodes. The **Link Maintenance Patents (the '450 and '539 Patents)** describe link maintenance operations involving the processing of probe messages at regular intervals to recalculate parameters such as modulation profile and transmit power.

35. This MoCA network allows for devices (MoCA nodes) connected to a MoCA network to communicate data formatted in a variety of formats. **The Packet Aggregation Patent (the '910 Patent)**, for example, describes the communication of data packets in an Ethernet format, via the on-premises coaxial network without the need to deploy a separate physical network on the premises.

36. **The Clock Sync Patent (the '681 Patent)** describes the synchronization of the clocks of each MoCA node in the network with a master clock provided by the Network Coordinator as these transmissions are fully coordinated.

37. The MoCA standards and the **PQoS Flow Patents (the '213 and '422 Patents)** describe how particular MoCA nodes can request additional network resources and/or transmission opportunities. This allows the MoCA node to transfer data more quickly across the MoCA network by borrowing resources that have been scheduled to other MoCA nodes.

38. These technological developments enable users to avoid the significant costs associated with rewiring their home or business in order to deploy a number of devices throughout the premises. Further, these technological developments allow services requiring reliable, high-speed data and video communications to be provided to the user while utilizing the on-premises coaxial network already present in the user's home or business.

39. Entropic Inc. spearheaded MoCA, and its founders are the inventors of several patents that cover various mandatory aspects of the MoCA standards. In other words, by conforming to the MoCA standards, a product necessarily practices those patents, either by itself, as a part of a MoCA-compliant system, or in the method in which it operates.

THE ACCUSED MOCA INSTRUMENTALITIES AND ACCUSED SERVICES

40. Charter utilizes various instrumentalities, deployable as nodes in a MoCA-compliant coaxial cable network.

41. Charter deploys the instrumentalities to, *inter alia*, provide a whole-premises DVR network over an on-premises coaxial cable network, with products including Charter Arris DCX3510, Charter Arris DCX3520, Charter Arris DCX3600, Charter Arris DCX3200, Charter Arris DCX3220 (and devices that operate in a similar manner) serving as nodes operating with data connections compliant with MoCA 1.0, 1.1, and/or 2.0. Such components are referred to herein as the "Accused MoCA Instrumentalities." The MoCA-compliant services offered by Charter employing the Accused MoCA Instrumentalities, including the operation of a MoCA-compliant network in which such instrumentalities are deployed, are referred to herein as the "Accused Services."

42. An exemplary illustration of the topology of various Accused MoCA Instrumentalities in a Charter deployment is pictured below.³

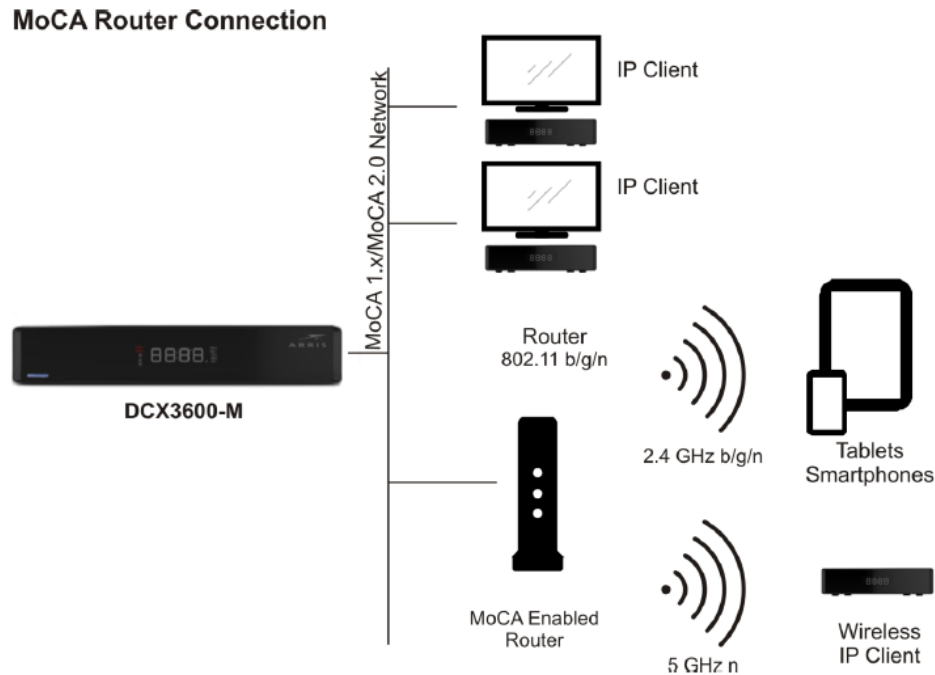


Figure 5 - A Typical Mixed MoCA/WiFi Home Network

43. Upon information and belief, the Accused MoCA Instrumentalities form networks over a coaxial cable network in accordance with MoCA 1.0, 1.1, and/or 2.0.

44. Charter's business includes the provision of Accused Services to its customers, by means of the Accused MoCA Instrumentalities.

45. Most commonly, the Accused Services are offered and provided in exchange for fees paid to Charter.

³ This is an example of the products used in the infringing network and is not intended to limit the scope of products accused of infringement.

46. Charter itself also sometimes tests and demonstrates the Accused Services, by means of the Accused MoCA Instrumentalities.

47. In some deployments of the Accused MoCA Instrumentalities and the performance of the Accused Services, Charter uses one or more of: the Charter Arris DCX3510, Charter Arris DCX3520, Charter Arris DCX3600, Charter Arris DCX3200, Charter Arris DCX3220 (and similarly operating devices) to provide signals, programming and content utilizing a data connection carried over a coaxial cable network in accordance with the MoCA standards.

48. Time Warner Cable was a cable television company acquired by Charter in or about 2016.

49. In January 2011, Mike Hayashi, in his capacity as Time Warner Cable's executive vice president of advanced engineering, announced that "Entropic's commitment to MoCA 2.0 advancements assures Time Warner Cable that our early investments in MoCA can be seamlessly transitioned to customers' interests for new services, applications, and architectures."⁴

50. Upon information and belief, Mr. Hayashi and/or other authorized Time Warner personnel authorized the publication and attribution of the preceding quotation to Mr. Hayashi.

51. Charter was aware of its deployment and use of MoCA at least as early as the later of its involvement with MoCA and six years prior to the filing of this complaint.

52. Upon information and belief, Charter was aware that Entropic Inc. invented technology underlying the MoCA standards. Accordingly, such Entropic, Inc. technology would be incorporated into any instrumentality compliant with the MoCA standards.

⁴ <https://www.globenewswire.com/news-release/2011/01/06/437282/9308/en/Entropic-Communications-Unveils-World-s-First-MoCA-2-0-Solution.html>

53. Upon information and belief, Charter's predecessor-in-interest Time Warner Cable was a contributing member of MoCA from at least February 2010 through September 2016, which provided Time Warner full access to all then-existing versions of the MoCA standards.

54. Upon information and belief, Charter and/or its subsidiaries was a contributing member of MoCA from at least September 2016 through September 2017, which provided Charter full access to all then-existing versions of the MoCA standards.

55. Upon information and belief, Charter was aware that Entropic Inc. intended to and did pursue patent protection for technology related to MoCA, at least as early as the later of its involvement with MoCA and the issue date of the Asserted Patents.

56. When Charter obtained, deployed and/or used instrumentalities with MoCA functionality not provided by Entropic Inc., Charter knew or should have known that Entropic Inc. had provided no authorization for such activities, for example by a patent license.

57. Upon information and belief, when Charter obtained, deployed and/or used instrumentalities with MoCA functionality not provided by Entropic Inc., Charter failed to investigate whether Entropic Inc. authorized the use of Entropic Inc.'s patents for such activity.

58. Alternatively, upon information and belief, when Charter obtained, deployed and/or used instrumentalities with MoCA functionality not provided by Entropic Inc., Charter knew the use of Entropic Inc.'s patents for such activity was not authorized by Entropic Inc.

JURISDICTION AND VENUE

59. This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a) because the claims herein arise under the patent laws of the United States, 35 U.S.C. § 1 et seq., including 35 U.S.C. § 271.

60. Venue in this Judicial District of the Eastern District of Texas ("District") is proper pursuant to 28 U.S.C. § 1400(b), because Charter has regular and established places of business in

this Judicial District. Charter, by itself and/or through its agents, has committed acts of patent infringement within the State of Texas and in this Judicial District by making, importing, using, selling, offering for sale, and/or leasing the Accused MoCA Instrumentalities, as well as Accused Services employing the Accused MoCA Instrumentalities that comply with MoCA 1.0, 1.1, and/or 2.0.

61. Charter, together with its controlled subsidiaries, is a cable operator that provides the Accused Services through the Accused MoCA Instrumentalities to subscribers under the Spectrum brand.

62. Charter has represented in proceedings before the United States International Trade Commission that Charter, together with its controlled subsidiaries, is a cable operator that provides television services through digital set-top boxes to subscribers under the Spectrum brand.

63. This Court has general personal jurisdiction over Charter because Charter conducts systematic and regular business within the State of Texas by, *inter alia* providing cable television, internet, and phone services to businesses and residents throughout this State and this Judicial District.

64. Charter has a regular and established place of business in this Judicial District at 1414 Summit Ave., Plano, Texas 75074.

65. The Court has specific personal jurisdiction over Charter because it has committed acts of infringement within the State of Texas and this Judicial District through, for example, making infringing networks using the Accused MoCA Instrumentalities, and using the Accused MoCA Instrumentalities to provide the Accused Services throughout the United States and in this Judicial District.


66. Upon information and belief, Charter, by itself and/or through its controlled subsidiaries, offers various telecommunication services throughout the United States. Charter

operates and maintains a nationwide television and data network through which Charter sells, leases, and offers for sale products and services, including the Accused MoCA Instrumentalities, to businesses, consumers, and government agencies. Through its subsidiaries, Charter offers to sell, sells, and provides Spectrum branded products and services, including, set top boxes and digital video, audio, and other content services to customers. Subscribers to Charter's television services receive one or more receivers and/or set-top boxes, within this Judicial District.

67. Upon information and belief, the Accused Services are provided through and using the Accused MoCA Instrumentalities.

68. Upon information and belief, Charter by itself, and/or through its agents owns, and or operates its businesses through *inter alia*, offices, Spectrum-branded storefronts, and/or other operational locations within the State of Texas and this Judicial District including, for example, at Spectrum stores located at 700 Alma Dr., Plano, Texas 75075; 2100 N. Dallas Pkwy, Plano, Texas 75075; and 4255-A Dowlen Rd., Beaumont, Texas 77706. Charter holds out these locations as its own through the use of its Spectrum branding on the locations themselves.

69. The Accused MoCA Instrumentalities provided by Charter to supply the Accused Services are provided to customers in this district and may be obtained by customers from physical locations in this district, including those at 700 Alma Dr., Plano, Texas 75075; 2100 N. Dallas Pkwy, Plano, Texas 75075; and 4255-A Dowlen Rd., Beaumont, Texas 77706.

70. Each of the above locations features the  logo. According to Charter's website, <https://corporate.charter.com/about-charter>, this logo refers to "a suite of advanced broadband services offered by Charter Communications, Inc."

71. Upon information and belief, Charter, by itself, and/or through its agents own and/or lease the premises where these Spectrum stores are located.

72. Upon information and belief, these Spectrum stores are staffed by persons directly employed by Charter, many of whom live in this Judicial District.

73. Upon information and belief, Charter has engaged in regular and established business at physical places within this Judicial District such as at these Spectrum stores.

74. Upon information and belief, Charter employs and/or contracts with persons and directs them to install, service, repair, and/or replace equipment, as appropriate, in this Judicial District.

75. Upon information and belief, in each of these stores and/or service centers, Charter owns and stores the Accused MoCA Instrumentalities and demonstrates the Accused Services provided via those products to Charter customers.

76. Upon information and belief, Charter's regular and established places of business within this Judicial District are used to conduct Charter's business, i.e. the provision of "Charter/Spectrum" cable television and internet services (which includes the Accused Services), and the maintenance and operation of communications networks within this Judicial District.

77. Venue is further proper because Charter has committed and continues to commit acts of patent infringement in this Judicial District, including, making, using, importing, offering to sell, and/or selling Accused Services and Accused MoCA Instrumentalities, and MoCA networks, and thereafter providing Accused Services in this Judicial District, including by Internet sales and sales via retail and wholesale stores. Furthermore, for example, Charter deploys Accused MoCA Instrumentalities to many thousands of locations (customer premises) in this Judicial District and subsequently, by means of the Accused MoCA Instrumentalities, uses the claimed inventions at those locations in this Judicial District. Charter infringes by inducing and contributing to acts of patent infringement in this Judicial District and/or committing at least a portion of any other infringement alleged herein in this Judicial District.

78. Charter continues to conduct business in this Judicial District, including the acts and activities described in the preceding paragraph.

COUNT I

(Infringement of the '518 Patent)

79. Entropic incorporates by reference each allegation of Paragraphs 1 through 78.

80. The '518 Patent duly issued on November 13, 2007 from an application filed December 18, 2002, an application filed August 29, 2002 and, *inter alia*, a provisional application filed August 30, 2001.

81. Entropic owns all substantial rights, interest, and title in and to the '518 Patent, including the sole and exclusive right to prosecute this action and enforce the '518 Patent against infringers, and to collect damages for all relevant times.

82. The '518 Patent is one of the Network Patents, and is generally directed to, *inter alia*, broadband local area data networks using on-premises coaxial cable wiring for interconnection of devices. Probe messages can be “sent between devices to characterize the communication channel and determine optimum bit loading” for communicating data between devices. '518 Patent, Abstract. The '518 Patent has four claims, of which claims 1 and 4 are independent. At least these claims of the '518 Patent are directed to the creation of the MoCA network using the on-premises coaxial cable wiring. A true and accurate copy of the '518 Patent is attached hereto as Exhibit 1.

83. The '518 Patent is directed to patent-eligible subject matter pursuant to 35 U.S.C. § 101.

84. The '518 Patent is valid and enforceable, and presumed as such, pursuant to 35 U.S.C. § 282.

85. Charter deploys one or more of the Accused MoCA Instrumentalities (e.g. Charter Arris DCX3510, Charter Arris DCX3520, Charter Arris DCX3600, Charter Arris DCX3200, Charter Arris DCX3220) in connection with operating and providing the Accused Services.

86. The Accused MoCA Instrumentalities deployed by Charter to customer premises remain the property of Charter while deployed.

87. The Accused MoCA Instrumentalities operate while deployed in a manner controlled and intended by Charter.

88. As set forth in the attached non-limiting claim chart (Exhibit 2), any product or system operating in a MoCA network compliant with the charted provisions of MoCA 1.0, 1.1, and/or 2.0 necessarily infringes at least claim 1 of the '518 Patent.

89. Each aspect of the functioning of the Accused MoCA Instrumentalities described in the claim chart operates while deployed to customer premises in a manner controlled and intended by Charter.

90. Charter provides no software, support or other facility to customers to modify any aspect of the functioning described in the claim chart of the Accused MoCA Instrumentalities while deployed to customer premises.

91. The Accused MoCA Instrumentalities are compliant with the provisions of MoCA 1.0, 1.1, and/or 2.0, as described in the '518 Patent claim chart, Exhibit 2.

92. Charter therefore directly infringes at least claim 1 of the '518 Patent by using the Accused MoCA Instrumentalities to provide Accused Services to customers.

93. Charter directly infringes at least claim 1 of the '518 Patent when it, for example, uses the Accused MoCA Instrumentalities to test, demonstrate or otherwise provide Accused Services.

94. Charter directly infringes at least claim 1 of the '518 Patent by making, importing, selling, and/or offering for sale the Accused MoCA Instrumentalities in connection with providing the Accused Services over an on-premises coaxial cable network, which meets every limitation of at least claim 1 of the '518 Patent.

95. Charter had knowledge of the '518 Patent no later than its receipt of Entropic's communications sent to Charter on April 27, 2022.

96. Charter has been aware that it infringes the '518 Patent no later than its receipt of Entropic's communications sent to Charter on April 27, 2022.

97. Charter has known of or has been willfully blind to the '518 Patent since before the April 27, 2022 communications from Entropic.

98. The '518 Patent issued while or before Charter was a member of MoCA.

99. Because of Charter's knowledge of Entropic Inc.'s work and contributions related to MoCA technology, Charter had knowledge of the '518 Patent before April 27, 2022 or was willfully blind to its existence.

100. The claims of the '518 Patent are essential to practicing at least MoCA standards versions 1.0, 1.1, and 2.0.

101. Charter knew, or was willfully blind to the fact that the technology of the '518 Patent directly relates to networking over coaxial cable, including MoCA, at least as early as Charter became aware of the existence of the '518 Patent. Because of its familiarity with, and access to, the MoCA standards, Charter knew, or was willfully blind to the fact, that use (by Charter or its customers) of instrumentalities compliant with MoCA 1.0, 1.1, and/or 2.0 to deliver Charter services would necessarily infringe one or more claims of the '518 Patent.

102. Since learning of the '518 Patent and its infringing activities, Charter has failed to cease its infringing activities.

103. Charter's customers and subscribers directly infringe at least claim 1 of the '518 Patent by using the Accused MoCA Instrumentalities in connection with the Accused Services provided by Charter.

104. Charter actively induces its customers' and subscribers' direct infringement by providing the Accused Services and associated support.

105. For example, Charter actively induces infringement of at least claim 1 of the '518 Patent by providing the Accused MoCA Instrumentalities to Charter customers with specific instructions and/or assistance (including installation and maintenance) regarding the instantiation of a MoCA network and the use of the Accused MoCA Instrumentalities to infringe the '518 Patent.

106. Charter aids, instructs, supports, and otherwise acts with, the intent to cause an end user to make and/or use the MoCA network and/or use the Accused MoCA Instrumentalities to infringe every element of at least claim 1 of the '518 Patent.

107. Additionally, Charter contributes to the customers' and subscribers' direct infringement. Charter provides at least the Accused MoCA Instrumentalities that create and are at least substantially all of a MoCA network to be used to infringe at least claim 1 of the '518 Patent.

108. The Accused MoCA Instrumentalities have no substantial noninfringing uses. When an end user uses the Accused MoCA Instrumentalities in connection with the Accused Services provided by Charter, the end user necessarily directly infringes at least claim 1 of the '518 Patent. The Accused MoCA Instrumentalities are therefore especially made or especially adapted for use in an infringing manner.

109. Charter's inducement of, and contribution to, the direct infringement of at least claim 1 of the '518 Patent has been, and is, continuous and ongoing through the acts described above in connection with Charter's provision of the Accused Services.

110. Charter's infringement of the '518 Patent is, has been, and continues to be willful, intentional, deliberate, and/or in conscious disregard for Entropic's rights under the patent.

111. Entropic has been damaged as a result of the infringing conduct alleged above. Charter is liable to Entropic in an amount that compensates Entropic for Charter's infringement, which by law cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

112. Upon information and belief, there is no duty to mark any instrumentality with the '518 Patent in accordance with 35 U.S.C. § 287.

COUNT II

(Infringement of the '249 Patent)

113. Entropic incorporates by reference each allegation of Paragraphs 1 through 112.

114. The '249 Patent duly issued on September 22, 2009 from an application filed July 21, 2001 and a provisional application filed May 4, 2001.

115. Entropic owns all substantial rights, interest, and title in and to the '249 Patent, including the sole and exclusive right to prosecute this action and enforce the '249 Patent against infringers, and to collect damages for all relevant times.

116. The '249 Patent is one of the Network Patents, and is generally directed to, *inter alia*, broadband cable networks that allow devices to communicate directly over the existing coaxial cable with its current architecture without the need to modify the existing cable infrastructure. Each device communicates with the other devices in the network and establishes parameters to overcome channel impairments in the coaxial cable network. '249 Patent, col. 3, lines 11–22. The '249 Patent has 17 claims, of which claims 1, 5, and 10 are independent. At least these claims of the '249 Patent are directed to the creation of the MoCA network using the on-

premises coaxial cable wiring. A true and accurate copy of the '249 Patent is attached hereto as Exhibit 3.

117. The '249 Patent is directed to patent-eligible subject matter pursuant to 35 U.S.C. § 101.

118. The '249 Patent is valid and enforceable, and presumed as such, pursuant to 35 U.S.C. § 282.

119. Charter deploys one or more of the Accused MoCA Instrumentalities (e.g. Charter Arris DCX3510, Charter Arris DCX3520, Charter Arris DCX3600, Charter Arris DCX3200, Charter Arris DCX3220) in connection with operating and providing the Accused Services.

120. The Accused MoCA Instrumentalities deployed by Charter to customer premises remain the property of Charter while deployed.

121. The Accused MoCA Instrumentalities operate while deployed in a manner controlled and intended by Charter.

122. As set forth in the attached non-limiting claim chart (Exhibit 4), any product or system operating in a MoCA network compliant with the charted provisions of MoCA 1.0, 1.1, and/or 2.0 necessarily infringes at least claim 10 of the '249 Patent.

123. Each aspect of the functioning of the Accused MoCA Instrumentalities described in the claim chart operates while deployed to customer premises in a manner controlled and intended by Charter.

124. Charter provides no software, support or other facility to customers to modify any aspect of the functioning described in the claim chart of the Accused MoCA Instrumentalities while deployed to customer premises.

125. The Accused MoCA Instrumentalities are compliant with MoCA 1.0, 1.1, and/or 2.0, as described in the '249 Patent claim chart, Exhibit 4.

126. Charter therefore directly infringes at least claim 10 of the '249 Patent by using the Accused MoCA Instrumentalities to provide Accused Services to customers.

127. Charter directly infringes at least claim 10 of the '249 Patent when it, for example, uses the Accused MoCA Instrumentalities to test, demonstrate or otherwise provide Accused Services.

128. Charter directly infringes at least claim 10 of the '249 Patent by making, importing, selling, and/or offering for sale the Accused MoCA Instrumentalities in connection with providing the Accused Services over an on-premises coaxial cable network, which meets every limitation of at least claim 10 of the '249 Patent.

129. Charter had knowledge of the '249 Patent no later than its receipt of Entropic's communications sent to Charter on April 27, 2022.

130. Charter has been aware that it infringes the '249 Patent no later than its receipt of Entropic's communications sent to Charter on April 27, 2022.

131. Charter has known of or has been willfully blind to the '249 Patent since before the April 27, 2022 communications from Entropic.

132. The '249 Patent issued while or before Charter was a member of MoCA.

133. Because of Charter's knowledge of Entropic Inc.'s work and contributions related to MoCA technology, Charter had knowledge of the '249 Patent before April 27, 2022 or was willfully blind to its existence.

134. The claims of the '249 Patent are essential to practicing at least MoCA standards versions 1.0, 1.1, and/or 2.0.

135. Charter knew, or was willfully blind to the fact that the technology of the '249 Patent directly relates to networking over coaxial cable, including MoCA, at least as early as Charter became aware of the existence of the '249 Patent. Because of its familiarity with, and

access to, the MoCA standards, Charter knew, or was willfully blind to the fact, that use (by Charter or its customers) of instrumentalities compliant with MoCA 1.0, 1.1, and/or 2.0 to deliver Charter services would necessarily infringe one or more claims of the '249 Patent.

136. Since learning of the '249 Patent and its infringing activities, Charter has failed to cease its infringing activities.

137. Charter's customers and subscribers directly infringe at least claim 10 of the '249 Patent by using the Accused MoCA Instrumentalities in connection with the Accused Services provided by Charter.

138. Charter actively induces its customers' and subscribers' direct infringement by providing the Accused Services and associated support.

139. For example, Charter actively induces infringement of at least claim 10 of the '249 Patent by providing the Accused MoCA Instrumentalities to Charter customers with specific instructions and/or assistance (including installation and maintenance) regarding the instantiation of a MoCA network and the use of the Accused MoCA Instrumentalities to infringe the '249 Patent.

140. Charter aids, instructs, supports, and otherwise acts with the intent to cause an end user to make and/or use the MoCA network and/or use the Accused MoCA Instrumentalities to infringe every element of at least claim 10 of the '249 Patent.

141. Additionally, Charter contributes to the customers' and subscribers' direct infringement. Charter provides at least the Accused MoCA Instrumentalities that create and are at least substantially all of a MoCA network to be used to infringe at least claim 10 of the '249 Patent.

142. The Accused MoCA Instrumentalities have no substantial noninfringing uses. When an end user uses the Accused MoCA Instrumentalities in connection with the Accused Services provided by Charter, the end user necessarily directly infringes at least claim 10 of the

'249 Patent. The Accused MoCA Instrumentalities are therefore especially made or especially adapted for use in an infringing manner.

143. Charter's inducement of, and contribution to, the direct infringement of at least claim 10 of the '249 Patent has been, and is, continuous and ongoing through the acts described above in connection with Charter's provision of the Accused Services.

144. Charter's infringement of the '249 Patent is, has been, and continues to be willful, intentional, deliberate, and/or in conscious disregard for Entropic's rights under the patent.

145. Entropic has been damaged as a result of the infringing conduct alleged above. Charter is liable to Entropic in an amount that compensates Entropic for Charter's infringement, which by law cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

146. Upon information and belief, there is no duty to mark any instrumentality with the '249 Patent in accordance with 35 U.S.C. § 287.

COUNT III

(Infringement of the '759 Patent)

147. Entropic incorporates by reference each allegation of Paragraphs 1 through 146.

148. The '759 Patent duly issued on February 15, 2011 from an application filed July 12, 2004, an application filed August 29, 2002, and, *inter alia* a provisional application filed August 30, 2001.

149. Entropic owns all substantial rights, interest, and title in and to the '759 Patent, including the sole and exclusive right to prosecute this action and enforce the '759 Patent against infringers, and to collect damages for all relevant times.

150. The '759 Patent is one of the Node Admission Patents, and is generally directed to, *inter alia*, broadband cable networks that allow devices to communicate directly over the existing

coaxial cable with its current architecture without the need to modify the existing cable infrastructure. Each device communicates with the other devices in the network and establishes a common modulation scheme between the devices in the network. '759 Patent, Abstract. The '759 Patent has 22 claims, of which claims 1–7, 14, 20–22 are independent. At least these claims of the '759 Patent are directed to a variety of techniques for establishing a modulation scheme for communications between nodes in the MoCA network. A true and correct copy of the '759 Patent is attached hereto as Exhibit 5.

151. The '759 Patent is directed to patent-eligible subject matter pursuant to 35 U.S.C. § 101.

152. The '759 Patent is valid and enforceable, and presumed as such, pursuant to 35 U.S.C. § 282.

153. Charter deploys one or more of the Accused MoCA Instrumentalities (e.g. Charter Arris DCX3510, Charter Arris DCX3520, Charter Arris DCX3600, Charter Arris DCX3200, Charter Arris DCX3220) in connection with operating and providing the Accused Services.

154. The Accused MoCA Instrumentalities deployed by Charter to customer premises remain the property of Charter while deployed.

155. The Accused MoCA Instrumentalities operate while deployed in a manner controlled and intended by Charter.

156. As set forth in the attached non-limiting claim chart (Exhibit 6), any product or system operating in a MoCA network compliant with the charted provisions of MoCA 1.0, 1.1, and/or 2.0 necessarily infringes at least claim 2 of the '759 Patent.

157. Each aspect of the functioning of the Accused MoCA Instrumentalities described in the claim chart operates while deployed to customer premises in a manner controlled and intended by Charter.

158. Charter provides no software, support or other facility to customers to modify any aspect of the functioning described in the claim chart of the Accused MoCA Instrumentalities while deployed to customer premises.

159. The Accused MoCA Instrumentalities are compliant with MoCA 1.0, 1.1, and/or 2.0, as described in the '759 Patent claim chart, Exhibit 6.

160. Charter therefore directly infringes at least claim 2 of the '759 Patent by using the Accused MoCA Instrumentalities to provide Accused Services to customers.

161. Charter sells the Accused Services to its customers and subscribers for a fee. Pursuant to the sale of these services, Charter uses the method recited in at least claim 2 of the '759 Patent to provide the Accused Services to Charter's customers and subscribers through the Accused MoCA Instrumentalities. Charter is therefore engaging in the infringing use of at least claim 2 of the '759 Patent in order to generate revenue from its customers and subscribers.

162. Charter directly infringes at least claim 2 of the '759 Patent when it, for example, uses the Accused MoCA Instrumentalities to test, demonstrate or otherwise provide Accused Services.

163. Charter had knowledge of the '759 Patent no later than its receipt of Entropic's communications sent to Charter on April 27, 2022.

164. Charter has been aware that it infringes the '759 Patent no later than its receipt of Entropic's communications sent to Charter on April 27, 2022.

165. Charter has known of or has been willfully blind to the '759 Patent since before the April 27, 2022 communications from Entropic.

166. The '759 Patent issued while or before Charter was a member of MoCA.

167. Because of Charter's knowledge of Entropic Inc.'s work and contributions related to MoCA technology, Charter had knowledge of the '759 Patent before April 27, 2022 or was willfully blind to its existence.

168. The claims of the '759 Patent are essential to practicing at least MoCA standards versions 1.0, 1.1 and/or 2.0.

169. Charter knew, or was willfully blind to the fact that the technology of the '759 Patent directly relates to networking over coaxial cable, including MoCA, at least as early as Charter became aware of the existence of the '759 Patent. Because of its familiarity with, and access to, the MoCA standards, Charter knew, or was willfully blind to the fact, that use (by Charter or its customers) of instrumentalities compliant with MoCA 1.0, 1.1, and/or 2.0 to deliver Charter services would necessarily infringe one or more claims of the '759 Patent.

170. Since learning of the '759 Patent and its infringing activities, Charter has failed to cease its infringing activities.

171. Charter's customers and subscribers directly infringe at least claim 2 of the '759 Patent by using the Accused MoCA Instrumentalities in connection with the Accused Services provided by Charter.

172. Charter actively induces its customers' and subscribers' direct infringement by providing the Accused Services and associated support.

173. For example, Charter actively induces infringement of at least claim 2 of the '759 Patent by providing the Accused MoCA Instrumentalities to Charter customers with specific instructions and/or assistance (including installation and maintenance) regarding the instantiation of a MoCA network and the use of the Accused MoCA Instrumentalities to infringe the '759 Patent.

174. Charter aids, instructs, supports, and otherwise acts with the intent to cause an end user to make and/or use the MoCA network and/or use the Accused MoCA Instrumentalities to infringe every element of at least claim 2 of the '759 Patent.

175. Additionally, Charter contributes to the customers' and subscribers' direct infringement. Charter provides at least the Accused MoCA Instrumentalities that create and are at least substantially all of a MoCA network to be used to infringe at least claim 2 of the '759 Patent.

176. The Accused MoCA Instrumentalities have no substantial noninfringing uses. When an end user uses the Accused MoCA Instrumentalities in connection with the Accused Services provided by Charter, the end user necessarily directly infringes at least claim 2 of the '759 Patent. The Accused MoCA Instrumentalities are therefore especially made or especially adapted for use in an infringing manner.

177. Charter's inducement of, and contribution to, the direct infringement of at least claim 2 of the '759 Patent has been, and is, continuous and ongoing through the acts described above in connection with Charter's provision of the Accused Services.

178. Charter's infringement of the '759 Patent is, has been, and continues to be willful, intentional, deliberate, and/or in conscious disregard for Entropic's rights under the patent.

179. Entropic has been damaged as a result of the infringing conduct alleged above. Charter is liable to Entropic in an amount that compensates Entropic for Charter's infringement, which by law cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

180. Upon information and belief, there is no duty to mark any instrumentality with the '759 Patent in accordance with 35 U.S.C. § 287.

COUNT IV

(Infringement of the '802 Patent)

181. Entropic incorporates by reference each allegation of Paragraphs 1 through 180.

182. The '802 Patent duly issued on December 27, 2011 from an application filed December 2, 2005 and a provisional application filed December 2, 2004.

183. Entropic owns all substantial rights, interest, and title in and to the '802 Patent, including the sole and exclusive right to prosecute this action and enforce the '802 Patent against infringers, and to collect damages for all relevant times.

184. The '802 Patent is one of the Node Admission Patents, and is generally directed to, *inter alia*, broadband cable networks that allow devices to communicate directly over the existing coaxial cable with its current architecture without the need to modify the existing cable infrastructure. Each device communicates with the other devices in the network and establishes the best modulation and other transmission parameters that is optimized and periodically adapted to the channel between each pair of devices. '802 Patent, col. 4, lines 7–24. The '802 Patent has four claims, all of which are independent. At least these claims of the '802 Patent are directed to a variety of techniques for establishing a modulation scheme for communications between nodes in the MoCA network. A true and accurate copy of the '802 Patent is attached hereto as Exhibit 7.

185. The '802 Patent is directed to patent-eligible subject matter pursuant to 35 U.S.C. § 101.

186. The '802 Patent is valid and enforceable, and presumed as such, pursuant to 35 U.S.C. § 282.

187. Charter deploys one or more of the Accused MoCA Instrumentalities (e.g. Charter Arris DCX3510, Charter Arris DCX3520, Charter Arris DCX3600, Charter Arris DCX3200, Charter Arris DCX3220) in connection with operating and providing the Accused Services.

188. The Accused MoCA Instrumentalities deployed by Charter to customer premises remain the property of Charter while deployed.

189. The Accused MoCA Instrumentalities operate while deployed in a manner controlled and intended by Charter.

190. As set forth in the attached non-limiting claim chart (Exhibit 8), any product or system operating in a MoCA network compliant with the charted provisions of MoCA 1.0, 1.1, and/or 2.0 necessarily infringes at least claim 3 of the '802 Patent.

191. Each aspect of the functioning of the Accused MoCA Instrumentalities described in the claim chart operates while deployed to customer premises in a manner controlled and intended by Charter.

192. Charter provides no software, support or other facility to customers to modify any aspect of the functioning described in the claim chart of the Accused MoCA Instrumentalities while deployed to customer premises.

193. The Accused MoCA Instrumentalities are compliant with MoCA 1.0, 1.1, and/or 2.0, as described in the '802 Patent claim chart, Exhibit 8.

194. Charter therefore directly infringes at least claim 3 of the '802 Patent by using the Accused MoCA Instrumentalities to provide Accused Services to customers.

195. Charter sells the Accused Services to its customers and subscribers for a fee. Pursuant to the sale of these services, Charter uses the method recited in at least claim 3 of the '802 Patent to provide the Accused Services to Charter's customers and subscribers through the Accused MoCA Instrumentalities. Charter is therefore engaging in the infringing use of at least claim 3 of the '802 Patent in order to generate revenue from its customers and subscribers.

196. Charter directly infringes at least claim 3 of the '802 Patent when it, for example, uses the Accused MoCA Instrumentalities to test, demonstrate or otherwise provide Accused Services and/or the Accused MoCA Instrumentalities.

197. Charter had knowledge of the '802 Patent no later than its receipt of Entropic's communications sent to Charter on April 27, 2022.

198. Charter has been aware that it infringes the '802 Patent no later than its receipt of Entropic's communication sent to Charter on April 27, 2022.

199. Charter has known of or has been willfully blind to the '802 Patent since before the April 27, 2022 communications from Entropic.

200. The '802 Patent issued while or before Charter was a member of MoCA.

201. Because of Charter's knowledge of Entropic Inc.'s work and contributions related to MoCA technology, Charter had knowledge of the '802 Patent before April 27, 2022 or was willfully blind to its existence.

202. The claims of the '802 Patent are essential to practicing at least MoCA standards versions 1.0, 1.1 and/or 2.0.

203. Charter knew, or was willfully blind to the fact that the technology of the '802 Patent directly relates to networking over coaxial cable, including MoCA, at least as early as Charter became aware of the existence of the '802 Patent. Because of its familiarity with, and access to, the MoCA standards, Charter knew, or was willfully blind to the fact, that use (by Charter or its customers) of instrumentalities compliant with MoCA 1.0, 1.1, and/or 2.0 to deliver Charter services would necessarily infringe one or more claims of the '802 Patent.

204. Since learning of the '802 Patent and its infringing activities, Charter has failed to cease its infringing activities.

205. Charter's customers and subscribers directly infringe at least claim 3 of the '802 Patent by using the Accused MoCA Instrumentalities in connection with the Accused Services provided by Charter.

206. Charter actively induces its customers' and subscribers' direct infringement by providing the Accused Services and associated support.

207. For example, Charter actively induces infringement of at least claim 3 of the '802 Patent by providing the Accused MoCA Instrumentalities to Charter customers with specific instructions and/or assistance (including installation and maintenance) regarding the instantiation of a MoCA network and the use of the Accused MoCA Instrumentalities to infringe the '802 Patent.

208. Charter aids, instructs, supports, and otherwise acts with the intent to cause an end user to make and/or use the MoCA network and/or use the Accused MoCA Instrumentalities to infringe every element of at least claim 3 of the '802 Patent.

209. Additionally, Charter contributes to the customers' and subscribers' direct infringement. Charter provides at least the Accused MoCA Instrumentalities that create and are at least substantially all of a MoCA network to be used to infringe at least claim 3 of the '802 Patent.

210. The Accused MoCA Instrumentalities have no substantial noninfringing uses. When an end user uses the Accused MoCA Instrumentalities in connection with the Accused Services provided by Charter, the end user necessarily directly infringes at least claim 3 of the '802 Patent. The Accused MoCA Instrumentalities are therefore especially made or especially adapted for use in an infringing manner.

211. Charter's inducement of, and contribution to, the direct infringement of at least claim 3 of the '802 Patent has been, and is, continuous and ongoing through the acts described above in connection with Charter's provision of the Accused Services.

212. Charter's infringement of the '802 Patent is, has been, and continues to be willful, intentional, deliberate, and/or in conscious disregard for Entropic's rights under the patent.

213. Entropic has been damaged as a result of the infringing conduct alleged above. Charter is liable to Entropic in an amount that compensates Entropic for Charter's infringement, which by law cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

214. Upon information and belief, there is no duty to mark any instrumentality with the '802 Patent in accordance with 35 U.S.C. § 287.

COUNT V

(Infringement of the '450 Patent)

215. Entropic incorporates by reference each allegation of Paragraphs 1 through 214.

216. The '450 Patent duly issued on January 14, 2014, from an application filed September 19, 2005 and, *inter alia*, a provisional application filed December 2, 2004.

217. Entropic owns all substantial rights, interest, and title in and to the '450 Patent, including the sole and exclusive right to prosecute this action and enforce the '450 Patent against infringers, and to collect damages for all relevant times.

218. The '450 Patent is one of the Link Maintenance Patents, and is generally directed to, *inter alia*, broadband cable networks that allow devices to communicate directly over the existing coaxial cable with its current architecture without the need to modify the existing cable infrastructure. Each device communicates with the other devices in the network and establishes a common modulation scheme between the devices in the network. '450 Patent, col. 4, lines 12-28. The '450 Patent has 38 claims, of which, claim 1, 8, 27, 29, and 34 are independent. At least these claims of the '450 Patent are directed to a variety of techniques for determining a common

modulation scheme for communications between nodes in the MoCA network. A true and accurate copy of the '450 Patent is attached hereto as Exhibit 9.

219. The '450 Patent is directed to patent-eligible subject matter pursuant to 35 U.S.C. § 101.

220. The '450 Patent is valid and enforceable, and presumed as such, pursuant to 35 U.S.C. § 282.

221. Charter deploys one or more of the Accused MoCA Instrumentalities (e.g. Charter Arris DCX3510, Charter Arris DCX3520, Charter Arris DCX3600, Charter Arris DCX3200, Charter Arris DCX3220) in connection with operating and providing the Accused Services.

222. The Accused MoCA Instrumentalities deployed by Charter to customer premises remain the property of Charter while deployed.

223. The Accused MoCA Instrumentalities operate while deployed in a manner controlled and intended by Charter.

224. As set forth in the attached non-limiting claim chart (Exhibit 10), any product or system operating in a MoCA network compliant with the charted provisions of MoCA 1.0, 1.1, and/or 2.0 necessarily infringes at least claim 29 of the '450 Patent.

225. Each aspect of the functioning of the Accused MoCA Instrumentalities described in the claim chart operates while deployed to customer premises in a manner controlled and intended by Charter.

226. Charter provides no software, support or other facility to customers to modify any aspect of the functioning described in the claim chart of the Accused MoCA Instrumentalities while deployed to customer premises.

227. The Accused MoCA Instrumentalities are compliant with MoCA 1.0, 1.1, and/or 2.0, as described in the '450 Patent claim chart, Exhibit 10.

228. Charter therefore directly infringes at least claim 29 of the '450 Patent by using the Accused MoCA Instrumentalities to provide Accused Services to customers.

229. Charter sells the Accused Services to its customers and subscribers for a fee. Pursuant to the sale of these services, Charter uses the method recited in at least claim 29 of the '450 Patent to provide the Accused Services to Charter's customers and subscribers through the Accused MoCA Instrumentalities. Charter is therefore engaging in the infringing use of at least claim 29 of the '450 Patent in order to generate revenue from its customers and subscribers.

230. Charter directly infringes at least claim 29 of the '450 Patent when it, for example, uses the Accused MoCA Instrumentalities to test, demonstrate or otherwise provide Accused Services.

231. Charter had knowledge of the '450 Patent no later than its receipt of Entropic's communications sent to Charter on April 27, 2022.

232. Charter has been aware that it infringes the '450 Patent no later than its receipt of Entropic's communication sent to Charter on April 27, 2022.

233. Charter has known of or has been willfully blind to the '450 Patent since before the April 27, 2022 communications from Entropic.

234. The '450 Patent issued while or before Charter was a member of MoCA.

235. Because of Charter's knowledge of Entropic Inc.'s work and contributions related to MoCA technology, Charter had knowledge of the '450 Patent before April 27, 2022 or was willfully blind to its existence.

236. The claims of the '450 Patent are essential to practicing at least MoCA standards versions 1.0, 1.1 and/or 2.0.

237. Charter knew, or was willfully blind to the fact that the technology of the '450 Patent directly relates to networking over coaxial cable, including MoCA, at least as early as

Charter became aware of the existence of the '450 Patent. Because of its familiarity with, and access to, the MoCA standards, Charter knew, or was willfully blind to the fact, that use (by Charter or its customers) of instrumentalities compliant with MoCA 1.0, 1.1, and/or 2.0 to deliver Charter services would necessarily infringe one or more claims of the '450 Patent.

238. Since learning of the '450 Patent and its infringing activities, Charter has failed to cease its infringing activities.

239. Charter's customers and subscribers directly infringe at least claim 29 of the '450 Patent by using the Accused MoCA Instrumentalities in connection with the Accused Services provided by Charter.

240. Charter actively induces its customers' and subscribers' direct infringement by providing the Accused Services and associated support.

241. For example, Charter actively induces infringement of at least claim 29 of the '450 Patent by providing the Accused MoCA Instrumentalities to Charter customers with specific instructions and/or assistance (including installation and maintenance) regarding the instantiation of a MoCA network and the use of the Accused MoCA Instrumentalities to infringe the '450 Patent.

242. Charter aids, instructs, supports, and otherwise acts with the intent to cause an end user to make and/or use the MoCA network and/or use the Accused MoCA Instrumentalities to infringe every element of at least claim 29 of the '450 Patent.

243. Additionally, Charter contributes to the customers' and subscribers' direct infringement. Charter provides at least the Accused MoCA Instrumentalities that create and are at least substantially all of a MoCA network to be used to infringe at least claim 29 of the '450 Patent.

244. The Accused MoCA Instrumentalities have no substantial noninfringing uses. When an end user uses the Accused MoCA Instrumentalities in connection with the Accused

Services provided by Charter, the end user directly infringes at least claim 29 of the '450 Patent. The Accused MoCA Instrumentalities are especially made or especially adapted for use in an infringing manner.

245. Charter's inducement of, and contribution to, the direct infringement of at least claim 29 of the '450 Patent has been, and is, continuous and ongoing through the acts described above in connection with Charter's provision of the Accused Services.

246. Charter's infringement of the '450 Patent is, has been, and continues to be willful, intentional, deliberate, and/or in conscious disregard for Entropic's rights under the patent.

247. Entropic has been damaged as a result of the infringing conduct alleged above. Charter is liable to Entropic in an amount that compensates Entropic for Charter's infringement, which by law cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

248. Upon information and belief, there is no duty to mark any instrumentality with the '450 Patent in accordance with 35 U.S.C. § 287.

COUNT VI

(Infringement of the '7,566 Patent)

249. Entropic incorporates by reference each allegation of Paragraphs 1 through 248.

250. The '7,566 Patent duly issued on April 9, 2019 from an application filed February 7, 2017, an application filed September 19, 2005, and *inter alia*, a provisional application filed December 2, 2004.

251. Entropic owns all substantial rights, interest, and title in and to the '7,566 Patent, including the sole and exclusive right to prosecute this action and enforce the '7,566 Patent against infringers, and to collect damages for all relevant times.

252. The '7,566 Patent is the Network Coordinator Patent, and is generally directed to, *inter alia*, broadband cable networks that allow devices to communicate directly over the existing coaxial cable with its current architecture without the need to modify the existing cable infrastructure. Each device communicates with the other devices in the network and establishes the best modulation and other transmission parameters that is optimized and periodically adapted to the channel between each pair of devices. '7,566 Patent, col. 4, lines 23–39. The '7,566 Patent has 20 claims, of which claims 1, 11, and 19 are independent. At least these claims of the '7,566 Patent are directed to a variety of techniques for controlling the admission of nodes in the MoCA network. A true and accurate copy of the '7,566 Patent is attached hereto as Exhibit 13.

253. The '7,566 Patent is directed to patent-eligible subject matter pursuant to 35 U.S.C. § 101.

254. The '7,566 Patent is valid and enforceable, and presumed as such, pursuant to 35 U.S.C. § 282.

255. Charter deploys one or more of the Accused MoCA Instrumentalities (e.g. Charter Arris DCX3510, Charter Arris DCX3520, Charter Arris DCX3600, Charter Arris DCX3200, Charter Arris DCX3220) in connection with operating and providing the Accused Services.

256. The Accused MoCA Instrumentalities deployed by Charter to customer premises remain the property of Charter while deployed.

257. The Accused MoCA Instrumentalities operate while deployed in a manner controlled and intended by Charter.

258. As set forth in the attached non-limiting claim chart (Exhibit 14), any product or system operating in a MoCA network compliant with the charted provisions of MoCA 1.0, 1.1, and/or 2.0 necessarily infringes at least claim 11 of the '7,566 Patent.

259. Each aspect of the functioning of the Accused MoCA Instrumentalities described in the claim chart operates while deployed to customer premises in a manner controlled and intended by Charter.

260. Charter provides no software, support or other facility to customers to modify any aspect of the functioning described in the claim chart of the Accused MoCA Instrumentalities while deployed to customer premises.

261. The Accused MoCA Instrumentalities are compliant with MoCA 1.0, 1.1, and/or 2.0, as described in the '7,566 Patent claim chart, Exhibit 14.

262. Charter therefore directly infringes at least claim 11 of the '7,566 Patent by using the Accused MoCA Instrumentalities to provide Accused Services to customers.

263. Charter directly infringes at least claim 11 of the '7,566 Patent when it, for example, uses the Accused MoCA Instrumentalities to test, demonstrate or otherwise provide Accused Services and/or the Accused MoCA Instrumentalities.

264. Charter directly infringes at least claim 11 of the '7,566 Patent by making, importing, selling, and/or offering for sale the Accused MoCA Instrumentalities, which meet every limitation of at least claim 11 of the '7,566 Patent, in connection with providing the Accused Services over an on-premises coaxial cable network.

265. Charter had knowledge of the '7,566 Patent no later than its receipt of Entropic's communications sent to Charter on April 27, 2022.

266. Charter has been aware that it infringes the '7,566 Patent no later than its receipt of Entropic's communication sent to Charter on April 27, 2022.

267. Charter has known of or has been willfully blind to the '7,566 Patent since before the April 27, 2022 communications from Entropic.

268. The '7,566 Patent issued while or before Charter was a member of MoCA.

269. Because of Charter's knowledge of Entropic Inc.'s work and contributions related to MoCA technology, Charter had knowledge of the '7,566 Patent before April 27, 2022 or was willfully blind to its existence.

270. The claims of the '7,566 Patent are essential to practicing at least MoCA standards versions 1.0, 1.1 and/or 2.0.

271. Charter knew, or was willfully blind to the fact that the technology of the '7,566 Patent directly relates to networking over coaxial cable, including MoCA, at least as early as Charter became aware of the existence of the '7,566 Patent. Because of its familiarity with, and access to, the MoCA standards, Charter knew, or was willfully blind to the fact, that use (by Charter or its customers) of instrumentalities compliant with MoCA 1.0, 1.1, and/or 2.0 to deliver Charter services would necessarily infringe one or more claims of the '7,566 Patent.

272. Since learning of the '7,566 Patent and its infringing activities, Charter has failed to cease its infringing activities.

273. Charter's customers and subscribers directly infringe at least claim 11 of the '7,566 Patent by using the Accused MoCA Instrumentalities in connection with the Accused Services provided by Charter.

274. Charter actively induces its customers' and subscribers' direct infringement by providing the Accused Services through the Accused MoCA Instrumentalities, and associated support.

275. For example, Charter actively induces infringement of at least claim 11 of the '7,566 Patent by providing the Accused MoCA Instrumentalities to Charter customers with specific instructions and/or assistance (including installation and maintenance) regarding the instantiation of a MoCA network and the use of the Accused MoCA Instrumentalities to infringe the '7,566 Patent.

276. Charter aids, instructs, supports, and otherwise acts with the intent to cause an end user to make and/or use the MoCA network and/or use the Accused MoCA Instrumentalities to infringe every element of at least claim 11 of the '7,566 Patent.

277. Additionally, Charter contributes to the customers' and subscribers' direct infringement. Charter provides, *inter alia*, the Accused MoCA Instrumentalities designed and configured to create a MoCA network and operate as nodes in the network, the use of which infringes at least claim 11 of the '7,566 Patent.

278. The Accused MoCA Instrumentalities have no substantial noninfringing uses. When an end user uses the Accused MoCA Instrumentalities in connection with the Accused Services provided by Charter, the end user directly infringes at least claim 11 of the '7,566 Patent. The Accused MoCA Instrumentalities are therefore especially made or especially adapted for use in an infringing manner.

279. Charter's inducement of, and contribution to, the direct infringement of at least claim 11 of the '7,566 Patent has been, and is, continuous and ongoing through the acts described above in connection with Charter's provision of the Accused Services.

280. Charter's infringement of the '7,566 Patent is, has been, and continues to be willful, intentional, deliberate, and/or in conscious disregard for Entropic's rights under the patent.

281. Entropic has been damaged as a result of the infringing conduct alleged above. Charter is liable to Entropic in an amount that compensates Entropic for Charter's infringement, which by law cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

282. Entropic is aware of no obligation to mark any instrumentality with the '7,566 Patent in accordance with 35 U.S.C. § 287.

COUNT VII

(Infringement of the '539 Patent)

283. Entropic incorporates by reference each allegation of Paragraphs 1 through 282.

284. The '539 Patent duly issued on December 31, 2013 from an application filed September 29, 2005 and, *inter alia*, a provisional application filed December 2, 2004.

285. Entropic owns all substantial rights, interest, and title in and to the '539 Patent, including the sole and exclusive right to prosecute this action and enforce the '539 Patent against infringers, and to collect damages for all relevant times.

286. The '539 Patent is one of the Link Maintenance Patents, and is generally directed to, *inter alia*, a physical layer transmitter that performs all of the necessary RF, analog and digital processing required for transmitting MAC messages between devices in a broadband cable network. '539 Patent, col. 4, lines 37–48. The '539 Patent has seven claims, of which claim 1 is independent. At least this claim of the '539 Patent is directed at a variety of techniques for monitoring and maintaining utilized modulation profiles in the MoCA network. A true and accurate copy of the '539 Patent is attached hereto as Exhibit 11.

287. The '539 Patent is directed to patent-eligible subject matter pursuant to 35 U.S.C. § 101.

288. The '539 Patent is valid and enforceable, and presumed as such, pursuant to 35 U.S.C. § 282.

289. Charter deploys one or more of the Accused MoCA Instrumentalities (e.g. Charter Arris DCX3510, Charter Arris DCX3520, Charter Arris DCX3600, Charter Arris DCX3200, Charter Arris DCX3220) in connection with operating and providing the Accused Services.

290. The Accused MoCA Instrumentalities deployed by Charter to customer premises remain the property of Charter while deployed.

291. The Accused MoCA Instrumentalities operate while deployed in a manner controlled and intended by Charter.

292. As set forth in the attached non-limiting claim chart (Exhibit 12), any product or system operating in a MoCA network compliant with the charted provisions of MoCA 1.0, 1.1, and/or 2.0 necessarily infringes at least claim 1 of the '539 Patent.

293. Each aspect of the functioning of the Accused MoCA Instrumentalities described in the claim chart operates while deployed to customer premises in a manner controlled and intended by Charter.

294. Charter provides no software, support or other facility to customers to modify any aspect of the functioning described in the claim chart of the Accused MoCA Instrumentalities while deployed to customer premises.

295. The Accused MoCA Instrumentalities are compliant with MoCA 1.0, 1.1, and/or 2.0, as described in the '539 Patent claim chart, Exhibit 12.

296. Charter therefore directly infringes at least claim 1 of the '539 Patent by using the Accused MoCA Instrumentalities to provide Accused Services to customers.

297. Charter directly infringes at least claim 1 of the '539 Patent when it, for example, uses the Accused MoCA Instrumentalities to test, demonstrate or otherwise provide Accused Services.

298. Charter directly infringes at least claim 1 of the '539 Patent by making, importing, selling, and/or offering for sale the Accused MoCA Instrumentalities, which meet every limitation of at least claim 1 of the '539 Patent, in connection with providing the Accused Services over an on-premises coaxial cable network.

299. Charter had knowledge of the '539 Patent no later than its receipt of Entropic's communications sent to Charter on April 27, 2022.

300. Charter has been aware that it infringes the '539 Patent no later than its receipt of Entropic's communication sent to Charter on April 27, 2022.

301. Charter has known of or has been willfully blind to the '539 Patent since before the April 27, 2022 communications from Entropic.

302. The '539 Patent issued while or before Charter was a member of MoCA.

303. Because of Charter's knowledge of Entropic Inc.'s work and contributions related to MoCA technology, Charter had knowledge of the '539 Patent before April 27, 2022 or was willfully blind to its existence.

304. The claims of the '539 Patent are essential to practicing at least MoCA standards versions 1.0, 1.1 and/or 2.0.

305. Charter knew, or was willfully blind to the fact that the technology of the '539 Patent directly relates to networking over coaxial cable, including MoCA, at least as early as Charter became aware of the existence of the '539 Patent. Because of its familiarity with, and access to, the MoCA standards, Charter knew, or was willfully blind to the fact, that use (by Charter or its customers) of instrumentalities compliant with MoCA 1.0, 1.1, and/or 2.0 to deliver Charter services would necessarily infringe one or more claims of the '539 Patent.

306. Since learning of the '539 Patent and its infringing activities, Charter has failed to cease its infringing activities.

307. Charter's customers and subscribers directly infringe at least claim 1 of the '539 Patent by using the Accused MoCA Instrumentalities in connection with the Accused Services provided by Charter.

308. Charter actively induces its customers' and subscribers' direct infringement by providing the Accused Services through the Accused MoCA Instrumentalities, and associated support.

309. For example, Charter actively induces infringement of at least claim 1 of the '539 Patent by providing the Accused MoCA Instrumentalities to Charter customers with specific instructions and/or assistance (including installation and maintenance) regarding the instantiation of a MoCA network and the use of the Accused MoCA Instrumentalities to infringe the '539 Patent.

310. Charter aids, instructs, supports, and otherwise acts with the intent to cause an end user to make and/or use the MoCA network and/or use the Accused MoCA Instrumentalities to infringe every element of at least claim 1 of the '539 Patent.

311. Additionally, Charter contributes to the customers' and subscribers' direct infringement. Charter provides, *inter alia*, the Accused MoCA Instrumentalities designed and configured to create a MoCA network and operate as nodes in the network, the use of which infringes at least claim 1 of the '539 Patent.

312. The Accused MoCA Instrumentalities have no substantial noninfringing uses. When an end user uses the Accused MoCA Instrumentalities in connection with the Accused Services provided by Charter, the end user directly infringes at least claim 1 of the '539 Patent. The Accused MoCA Instrumentalities are therefore especially made or especially adapted for use in an infringing manner.

313. Charter's inducement of, and contribution to, the direct infringement of at least claim 1 of the '539 Patent has been, and is, continuous and ongoing through the acts described above in connection with Charter's provision of the Accused Services.

314. Charter's infringement of the '539 Patent is, has been, and continues to be willful, intentional, deliberate, and/or in conscious disregard for Entropic's rights under the patent.

315. Entropic has been damaged as a result of the infringing conduct alleged above. Charter is liable to Entropic in an amount that compensates Entropic for Charter's infringement,

which by law cannot be less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

316. Entropic is aware of no obligation to mark any instrumentality with the '539 Patent in accordance with 35 U.S.C. § 287.

JURY DEMAND

Entropic hereby requests a trial by jury on all issues so triable by right.

PRAYER FOR RELIEF

WHEREFORE, Entropic requests that:

- A. The Court find that Charter has directly infringed the Patents-in-Suit and hold Defendants liable for such infringement;
- B. The Court award damages pursuant to 35 U.S.C. § 284 adequate to compensate Entropic for Charter's past and future infringement of the Patents-in-Suit, including both pre- and post-judgment interest and costs as fixed by the Court;
- C. The Court increase any award to Entropic by a judicially appropriate amount;
- D. The Court declare that this is an exceptional case entitling Entropic to its reasonable attorneys' fees under 35 U.S.C. § 285; and
- E. The Court award such other relief as the Court may deem just and proper.

Dated: April 19, 2023

Respectfully submitted,

/s/ James Shimota by permission Wesley Hill

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CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing document was filed electronically in compliance with Local Rule CV-5(a). Therefore, this document was served on all counsel who are deemed to have consented to electronic service on this the 19th day of April, 2023.

/s/ James Shimota by permission Wesley Hill